GAO

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General Accounting Office
Washington, D.C. 20548

Information Management and
Technology Division

B-241969

April 22, 1991

The Honorable Earl Hutto
Chairman, Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

This report responds to your May 14, 1990, request that we evaluate th Department of Defense's actions to date in implementing its Corporate Information Management (CIM) initiative. Defense's past approach to information resource management has led to the development of duplicate information systems that do not always meet its business information needs. Defense initiated CIM in October 1989 to improve its business practices, make better use of information technology, and eliminate duplicate information systems. This is an ambitious undertaking with potentially significant savings since Defense spends about $9 billion annually to develop, operate, and maintain its automated information systems. Appendix I of this report details our objective, scope, and methodology.

Results in Brief

CIM is a laudable undertaking. However, Defense is a huge organization with long-established business practices and hundreds of existing information systems supporting these practices. Accomplishing CIM's long-term goals thus requires many years—perhaps a decade—and necessitates a long-term and near-term implementation strategy. In the long-term, Defense should focus on redefining how it conducts business and developing standard information systems to support these new business processes. In the near-term, focus should be on determining how best to support Defense's ongoing business operations until the new practices and standard systems can be implemented.

Defense has taken several steps to implement CIM in its first year. It set up an Executive Level Group of industry experts and senior Defense executives to provide overall direction and a vision for CIM and established a network of interservice oversight and functional area work groups to implement CIM. The Office of the Secretary of Defense (OSD) also reduced the services'[1] information technology budgets to encourage

[1]Services, as used in this report, refers to the Departments of Army, Navy, Air Force, and the Defense agencies.

them to curtail duplicate systems development. Defense has encountered difficulties, however, with the functional groups' need for additional expertise and the services' concerns that their short-term information processing requirements are being neglected.

Defense is attempting to find a workable approach for overcoming these obstacles and achieving its CIM goals. It is changing its internal organization to implement CIM and examining ways to streamline and speed up the CIM process. Defense is also considering selecting the best of the existing service systems to use as interim systems until it decides how best to implement CIM standard systems.

Despite these efforts, Defense still faces significant challenges. As it attempts to improve its business practices and standardize information systems, OSD must provide strong leadership and establish an effective organizational structure with clear lines of authority and accountability for achieving specific CIM goals. It must also develop an overall strategy, with both long-term and short-term objectives and milestones, that will allow it to obtain the commitment and support of the services. The strategy will also need to serve as a roadmap showing how its long-term efforts to improve business practices mesh with its short-term goals of eliminating duplicate information systems and providing information resources to support the services' ongoing operations. The strategy should provide sound criteria for determining which development efforts to stop and which to continue.

Background

For many years the military services and other Defense organizations have developed and operated multiple, unique automated information systems, often to do similar jobs. For example, Defense has over 30 automated systems to pay its civilian employees. Because so many of these information systems were considered redundant, and because of the need to improve information management, the Deputy Secretary of Defense established the CIM initiative in October 1989. The initiative supports Defense's efforts to improve operations and cut costs, as outlined in the July 1989 Defense Management Report to the President.

CIM long-term goals are to (1) implement new or improved business methods—the way Defense pays civilian personnel or tracks government property, for example—and create more uniform business processes for common functions during this decade, and (2) improve the

standardization, quality, and consistency of data from Defense's management information systems and develop standard information systems to meet common functional requirements. In the shorter term, CIM is intended to reduce or eliminate information systems that perform the same functions.

Through CIM, Defense expects to save about $2.2 billion over the next 5 years by eliminating duplicate systems and implementing standard systems. However, we reported earlier this year that (1) Defense had no analysis to support the estimated savings, and (2) it is misleading to consider the savings achievable until Defense more clearly shows what specific duplicate systems development efforts will be curtailed and how and when standard systems will be implemented.[2]

Initial Actions to Implement CIM

Defense has taken a number of actions over the past year to implement CIM. At the outset, OSD reduced the services' fiscal years 1991 through 1995 information technology budgets by $2.2 billion to encourage them to identify and cut duplicative system developments and to reflect savings from CIM. In the fall of 1989, Defense established an Executive Level Group of industry and senior Defense experts to provide overall guidance to CIM, as well as an organization of interservice management oversight and working groups to implement the initiative. The groups included functional steering committees to oversee progress and policy issues, a CIM Council to review methodology and procedures, and eight functional work groups.

The functional work groups—Civilian Payroll, Civilian Personnel, Contract Payment, Distribution Centers, Financial Operations, Government Furnished Property, Materiel Management, and Medical—were convened between December 1989 and June 1990 and comprise primarily technical and functional staff detailed from the services. The groups' goals are to propose more effective business processes, common information requirements and data standards, and ultimately, standardized information systems for their respective functions. Thus far, each group has developed fairly broad concepts of how their respective functions could be better performed at Defense, but none has developed a detailed strategy for accomplishing its plans. According to OSD, the groups will require 12 to 24 months to perform their work, depending on the function's size and complexity.

[2]Defense ADP: Corporate Information Management Savings Estimates Are Not Supported (GAO/IMTEC-91-18, Feb. 22, 1991).

OSD selected the eight functional areas primarily because the Deputy Secretary of Defense included most of them as examples of common business areas in a October 1989 memorandum announcing the CIM initiative. Some of the areas, such as materiel management, are broad and complex and will be difficult to standardize; others, such as medical, are already somewhat standardized. OSD has not yet determined how or when additional functional areas will be studied for standardization. OSD officials stated, however, that other functions such as technical data, military pay, and travel are being considered as additional functional areas.

To identify more effective business methods, the functional groups are following a complex approach that uses both process and data models. Process models document business methods by graphically describing tasks performed and their sequence, and data models illustrate the data needed to execute these tasks. As they complete their task, the functional groups are to prepare a strategy for developing a standard system. Appendix II provides an illustration and detailed discussion of the process being used by the functional groups.

Functional groups have encountered difficulties, however. They have told OSD that they do not have enough expertise to prepare a detailed strategy for moving to standard systems. Simply understanding and analyzing the services' diverse business practices has been a complex undertaking. In addition, identifying and cataloging existing information systems has been difficult for the groups because of the large number of systems and the overlap of these systems among various functions.

The military services have expressed support for CIM, but are concerned about how it is being implemented. Senior service officials state that while their budgets are being cut based on CIM, the initiative will not produce standard systems for 8 to 10 years. As a result, they have been reluctant to stop their own system developments. In addition, OSD has not done sufficient analysis or established criteria to help the services determine which system developments to continue and which to curtail. The services have questioned whether enough individual system development efforts can or should be curtailed to account for the budget reductions and, thus, whether the promised savings will accrue during the first several years. These officials also expressed concern that the budget reductions may cause significant problems in maintaining existing systems needed for such functions as paying and tracking financial obligations and providing logistical support.

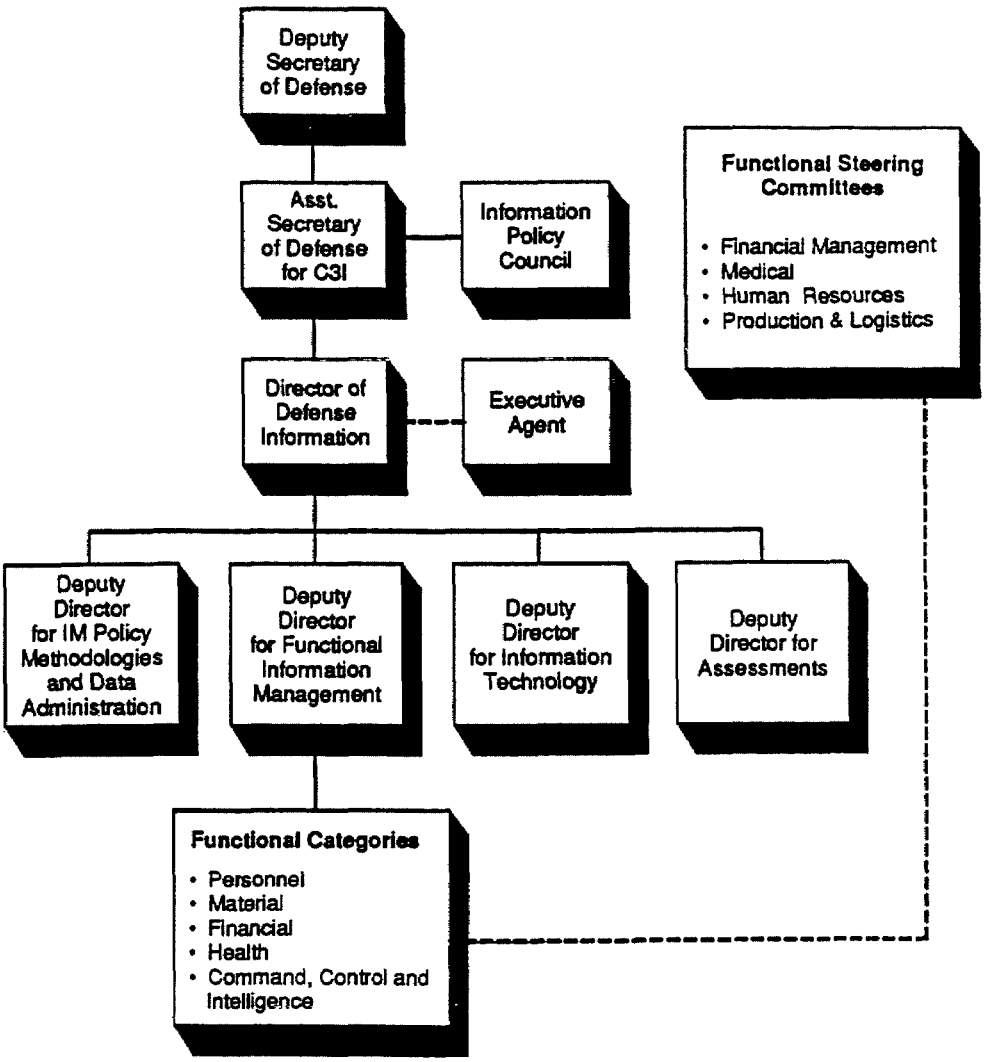
Defense Actions to Improve CIM Implementation

Defense is reorganizing and reexamining its prior efforts to implement CIM. In September 1990, the Executive Level Group completed its overa plan for CIM. The plan provides a model for guiding CIM and a vision of Defense information management, but does not provide details on how CIM should be implemented. In addition, the Executive Level Group found that the process being used to define common functional require ments was taking too long. The Group determined that Defense needed to improve the CIM functional process and expedite the overall initiativ

In November 1990, the Secretary of Defense transferred responsibility for CIM and all other information management and technology policies from the Comptroller's office to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence. This was done tc integrate Defense computing, telecommunications, and information ma agement, and to establish a new organization to implement CIM.

The Department's reorganization, discussed in a January 1991 plan, establishes new positions and organizations to implement CIM and reflects OSD's need to obtain personnel with adequate technical skills tc implement CIM. The plan shows that computer science skills will be needed, as well as personnel, finance, acquisition, command and contro and health skills. Figure 1 provides an organizational chart and appendix III describes key groups and their responsibilities. According to Defense officials, further organizational changes are being contemplated.

Figure 1: Planned Organization for the Development of CIM



Aside from the shift of authority and responsibility to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence, the most significant organizational changes include the newly-created positions of Director of Defense Information and Deputy Director for Functional Information Management. The Director of Defense Information will have broad Defense-wide information technology responsibilities for implementing and overseeing the development of standard information systems. The Deputy Director for

Functional Information Management will administer the CIM initiative and evaluate the functional groups' progress.

Defense officials stated that they are currently reassessing the CIM functional process and will change the process if improvements are identified. Further, they stated that the four functional steering committees would be looking at recommendations by the CIM functional groups on how to improve current business processes and information systems.

In an effort to achieve benefits before deploying standard systems and respond to services' concerns about meeting short-term requirements, Defense officials are also examining whether interim systems can be established. Interim systems would support Defense-wide requirements for specific functional areas until a standard system could be developed An interim system would likely be either a (1) system currently in use by one of the services or (2) a hybrid system composed of modules built from current systems, and would be based upon current business practices. OSD is planning to assign an executive agent from one of the services to assess and manage interim information systems for each functional area. The executive agent will determine the feasibility of moving from several systems to one interim system and recommend an architecture for such a system.

To date, OSD and service officials have (1) begun to inventory existing systems in each functional area; (2) debated the selection of specific systems or approaches for developing interim systems; and (3) selected one interim system, the Theater Army Medical Management Information System, for the medical function. OSD officials are also examining the potential for building upon, and ultimately deriving their standard systems from these interim systems.

Issues That Defense Needs to Address

During the past year, Defense's plans and organization for implementing CIM have been evolving as it obtains experience and confronts issues that will impede progress. To accomplish this major initiative, Defense will need to stabilize its CIM organization and ensure that clear lines of authority and accountability are established for achieving specific goals. It will also need to develop an overall strategy for achieving each of the initiative's goals while satisfying the services' valid short-term requirements. To be effective, the strategy will need to establish measurable, long-term and short-term objectives, and provide target dates for actions to accomplish these objectives. Such a strategy will allow CIM to transcend changes in Defense administrations and provide a basis for

assessing progress. Specifically, this strategy should provide direction for (1) obtaining cooperation between OSD and the services; (2) analyzing Defense's installed base of current information systems and developing criteria for curtailment of redundant systems; (3) determining how and when Defense will address other functional areas for standardization; and (4) determining if OSD funding control over services' system development efforts should be extended beyond fiscal year 1991.

CIM's ultimate success will depend upon the mutual commitment and support of OSD and the military services. The services will have to cooperate with OSD to select and implement standard systems and curtail competing duplicate system development efforts. OSD, in turn, will need to provide strong leadership and ensure that sufficient managerial and technical expertise is devoted to and continues on this initiative.

To provide short-term benefits, Defense must evaluate its installed base of existing systems so it can make informed decisions about which systems to eliminate and which to adopt as interim systems. Defense will need to establish evaluation criteria to ensure that there is a sound basis for the systems selected. In the event that an interim system holds promise for use as a standard system, Defense must carefully analyze the prospective costs and technical and business risks of evolving such a system before proceeding.

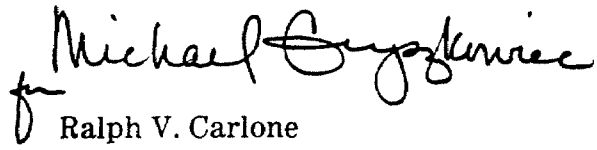
Defense is currently studying eight of its many functional areas, and plans to study others under the CIM initiative. As it develops an overall strategy and assesses current efforts, Defense will need to determine how and when other functional areas will be examined.

The fiscal year 1991 Defense Appropriations Act gave OSD control of all funds for Defense information systems development. In response, the services systematically directed their development funding requests through OSD. As the Assistant Secretary of Defense for Command, Control, Communications and Intelligence develops an overall strategy for CIM, he should consider extending OSD's direct control over services' systems development funding to ensure that progress is made toward curtailing duplicative systems development.

As agreed with your office, we will provide a copy of this report to the Senate Committee on Governmental Affairs. Unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the date of this letter. At that time we will send

copies to the Chairmen, Senate and House Committees on Appropriations; the Chairman, Senate Committee on Armed Services; the Secretaries of Defense, Army, Navy, and Air Force; Director, Defense Logistics Agency; and other interested parties. This work was performed under the direction of Samuel W. Bowlin, Director for Defense and Security Information Systems, who can be reached at (202) 275-4649. Other major contributors are listed in appendix IV.

Sincerely yours,



Ralph V. Carlone
Assistant Comptroller General

Contents

Figures

Abbreviations

CIM	Corporate Information Management
GAO	General Accounting Office
IMTEC	Information Management and Technology Division
OSD	Office of the Secretary of Defense

Objective, Scope, and Methodology

On May 14, 1990, the Chairman, Subcommittee on Readiness, House Committee on Armed Services asked us to review Defense's CIM initiative and report on Defense's (1) efforts to terminate systems currently under development which may eventually be replaced by standard systems, and (2) basis for estimated savings to be derived by the CIM initiative. On the basis of this request and discussions with the Chairman's office, we agreed to evaluate Defense's actions to date in implementing CIM. We responded in a separate report to the Chairman's request to review the basis for estimated CIM savings.

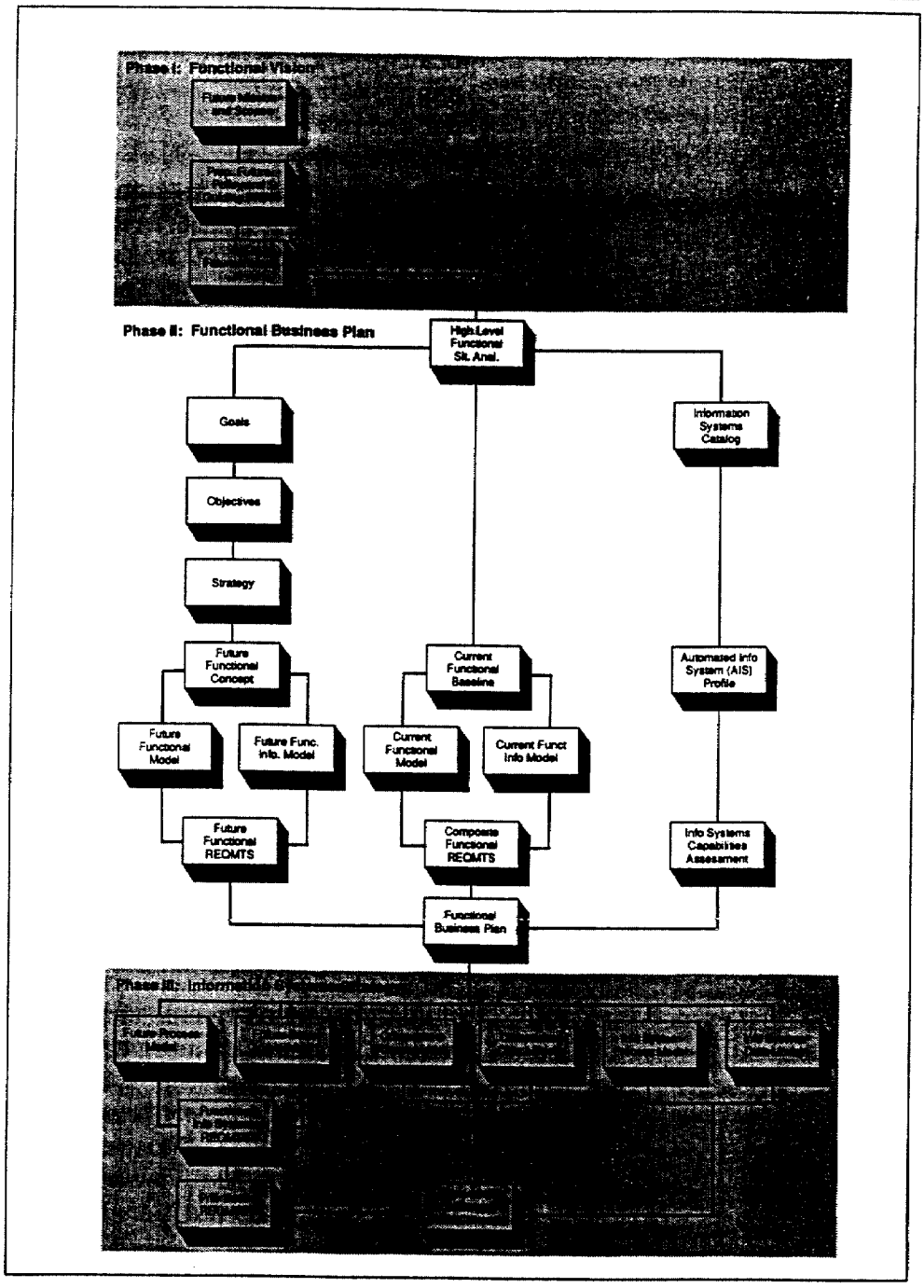
To address our objective, we interviewed senior OSD officials including the Director for Defense Information; Deputy Comptroller for IRM; Special Assistant to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence; CIM Director; and the Information Systems Strategy Director. We also talked to the military services' and Defense Logistics Agency's senior IRM officials, and members of the functional working groups. We interviewed other officials from OSD, the military services, the Information Resources Management College, and private industry. To further assess actions to implement CIM, we reviewed Defense memoranda establishing and promoting the initiative, the charters of the organizational components designed to implement CIM, the Executive Level Group's CIM plan, the process guide being used by the functional working groups, and interim products developed by the working groups. We examined Defense strategic information technology plans, catalogs of information systems by service or function, and documentation related to Defense's efforts to terminate or modify systems and nominate interim standard systems. We also reviewed reports on past efforts to streamline or standardize business practices among Defense components and budgetary data showing anticipated fiscal reductions based on the CIM initiative.

As requested, we did not obtain official agency comments on a draft of this report. However, we discussed its contents with Defense officials and have incorporated their views where appropriate. Our work was performed in accordance with generally accepted government auditing standards, between July 1990 and January 1991, primarily at OSD, military service, and Defense Logistics Agency offices in Washington, D.C.

CIM Functional Process

The CIM functional process is detailed, complex, and lengthy. It is divided into three phases and 28 separate steps, as shown in figure II.1.

Figure II.1: CIM Functional Process



Source: Department of Defense

The first phase, Functional Vision, provides broad direction for the function and the group, as it proceeds with the rest of the process. During this phase, the functional groups will (1) define the future mission and scope of the function; (2) identify existing policy and guiding principles which may affect the function and propose new principles, as appropriate; and (3) develop a vision of how the function should be defined in the future.

The second phase, Functional Business Plan, defines the requirements for the future function. In this phase, the groups establish what they believe the functional area's goals, objectives, strategy, and functional requirements should be. The groups will also examine the current functional environment and determine what information systems support the function today. A functional business plan summarizing the results of all work conducted thus far will be produced. This plan is supposed to assess the affordability of implementing the requirements that the groups have developed for their respective functions. According to the process guide, it should also identify and quantify benefits, the cost of replacing existing information systems, and other resource requirements such as personnel, equipment, and communications costs.

The third phase, Information Systems Strategy, is the set of actions, milestones, and procedures that the groups will develop and recommend that Defense use to transition from current information systems to the standard CIM system that will support the function in the future. The strategy suggested may range from the adoption of a current system without modification to complete system design and development. The process guide indicates that implementation of this strategy is beyond the scope of the functional process.

While many of these steps must be performed sequentially, others can be done concurrently, as indicated in figure II.1. For instance, these steps can be done concurrently where the groups are examining current functional requirements and information systems and also developing future functional requirements. The entire process is estimated to require 12 to 24 months to complete, depending on the size and complexity of the function. According to the CIM process guide, each of the three phases will be documented by a set of products. These products are supposed to be reviewed and approved by a functional steering committee before the functional groups proceed to the next phase. The final

product at the end of the third phase is a functional description of the target standard system. This description will be the starting point to begin designing and developing a standard system. Experience has shown it will take another 5 to 10 years to develop, test, and field.

Planned Organization for the Development of CIM

After one year, responsibility for the CIM initiative transitioned from the Defense Comptroller to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence. On November 16, 1990, the Assistant Secretary assumed responsibility and subsequently developed a plan and new organization for implementing CIM. While some key components of Defense's original CIM organization have been retained, most notably the functional groups and steering committees, new positions and offices were also created to support the CIM initiative.

The Deputy Secretary of Defense has played a key role in implementing the CIM initiative. After establishing CIM in October 1989, he appointed members to the Executive Level Group, which is a panel of industry and senior Defense experts charged with recommending an overall approach for CIM. Most recently, the Deputy Secretary of Defense issued guidance on changes in CIM implementation.

The newly created position of Director of Defense Information is responsible for developing and managing a program for the implementation, execution, and oversight of Corporate Information Management principles. The Director will also implement a process for defining and documenting business methods and oversee the development of functional prototype systems. This official will also assume the broader Defense-wide information technology functions, which were the responsibility of the Deputy Comptroller for Information Resources Management, and report to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence.

The Deputy Director for Functional Information Management will implement and administer the initiative, essentially as the Director, CIM Directorate, did at the time of our review. The Deputy Director will oversee the functional groups' progress and coordinate work between the functional user and the CIM functional groups.

The Functional Steering Committees facilitate implementation of the products and policy recommendations of the functional groups. They are composed of senior officials responsible for functional areas and chaired by Assistant Secretaries of Defense. The committees are primarily responsible for periodically reviewing the progress and products of functional groups, resolving interface and integration issues across these groups, and reviewing candidates for interim standard systems.

Eight functional groups were convened between December 1989 and June 1990, and continue their work in the new CIM organization. They

will continue to develop common functional requirements and more effective business methods for use by all Defense components. The functional groups range in size from 8 to 30 people and consist of full-time functional and information systems personnel from the services and Defense agencies. On the basis of the most recent CIM plans, the groups will be part of newly designated functional categories, including personnel, materiel, financial, health, and command, control and intelligence. The new CIM plans refer to these categories as primary resource areas that will be responsible for overseeing the existing functional groups and developing new functional areas, as needed.

The Information Policy Council was established to exchange information management concepts and plans and to provide a forum for the exchange of views on achieving the CIM objectives. The Council will be composed of senior OSD and service representatives for information management and technology matters.

Major Contributors to This Report

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EXIT CONFERENCE
GAO REVIEW OF DOD'S CIM INITIATIVE
April 1, 1991

Background

-- DOD's past approach to information resource management has led to a proliferation of systems.

-- Changing this approach will not be easy. May take years.

-- DOD has initiated CIM to make better use of technology; (to improve business practices, standardize data and reduce redundant systems).

Actions to Implement

-- Formed group of industry experts and senior DOD executives to set the direction of CIM.

-- Set up eight functional study groups to propose more effective business practices and information requirements for standardized information systems.

-- OSD reduced services technology budgets to encourage them to curtail development of duplicate systems. Promised $2.2 billion in savings in FY 91-95.

Implementation Problems

-- Services concerned that while budgets were cut, the CIM approach will not produce standard systems for 8-10 years.

-- Little progress in eliminating redundant systems because (1) no early strategy for addressing services' short term processing needs, and (2) resistance by services to prioritize systems for curtailment. As a result, early savings may not accrue.

-- Functional groups began work before ELG provided overall guidance.

-- Functional groups need additional expertise; process for developing standard systems needs to be streamlined and improved.

- ELG noted - necessary for process

We did FG by design - we defined role

3

DOD Actions to Address Problems and Improve CIM

-- Reorganizing to implement CIM.

-- Examining ways to streamline and speed up functional group process.

-- Considering selecting the best of existing service systems to use as interim systems until standard systems can be developed.

evolved; not part of original design criteria

Issues that Need to be Addressed

-- DOD still faces significant challenges. OSD must:

  -- provide strong leadership and find ways to obtain mutual support and commitment from services, services support waning

  -- settle on a process to define how it will do business in the future and how it will overcome the problems of diverse data standards and system architectures and interfaces, and

  -- ensure that responsibilities for CIM implementation are clearly defined. C^3, P&L, Comptr, EA + CIM FG

-- As DOD pursues its long-term goals it must not lose sight of its substantial investment in existing information technology and valid near-term requirements.
near term vs. long term

-- DOD will need to develop specific criteria for curtailing systems and selecting others to continue.

-- DOD will need to determine <u>how</u> and when it will address other functional areas for standardization.
how should other functional areas be done?

-- DOD will need to determine if centralized funding control is needed to ensure that CIM is effectively implemented.

- Services not fully cooperative
- OSD has funding authorities
  - eval. process
  - paperwork process
  - 30% reduction